Smart Charger **SBC - 8268**
User's Manual

Introduction

The SBC-8268 is a 4 Stage switch mode charger with MCU controlled constant current pulse Bulk, PWM (Pulse Width Modulation) Absorption and PWM Float / Maintenance charge. It is suitable for all types of 24V all types wet, sealed lead (GEL, AGM) acid, Calcium-Calcium battery. It can recondition lightly sulphatd lead acid battery. Though it is primarily designed for indoor use, it has a splash proof sealed Polycarbonate casing.

*****Please read this manual carefully and follow the instructions*****

Features

1. 4 Stage Charge with constant current pulse Bulk, PWM Absorption & Float.
   - **A.** Check & Qualifying battery to Desulphate Pulse Charging.
   - **B.** Constant current pulse Bulk charge
   - **C.** PWM Absorption charge
   - **D.** PWM Float / Maintenance charge.
2. Wet, sealed lead (GEL, AGM) acid, and Calcium-Calcium battery type selection.
3. Select and forget operation and can be connected to battery for months.
4. Auto recover to last selected Charge Mode on return from AC power blackout.
5. Electronic wrong battery connection, short circuit protections
6. Over temperature protection from decrease in output current to shut down.
7. The Microprocessor unit (MCU) controls charging and monitors battery state of charge with advanced PWM charging which makes it faster and saver charge your battery without overcharging or undercharging.

Contents

- Smart Charger with lead connector
- Detachable leads with protection cover & crocodile clips
- Detachable leads with protecion cover & ring terminals

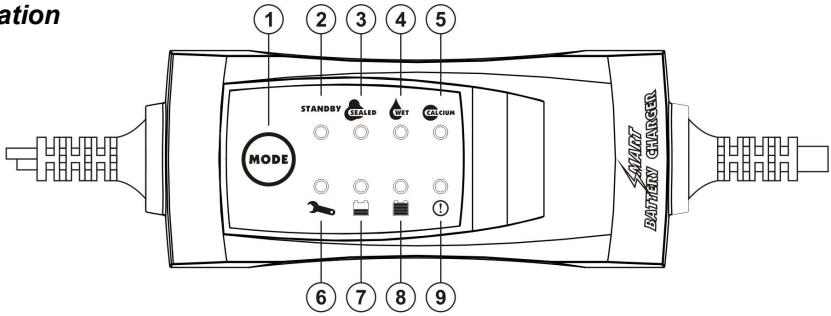
Warning :

- This charger is designed for only charging 24V lead acid batteries of 8 to 60Ah.
- Do not use this charger for any other purpose
- For indoor use only
- Explosion hazard: A battery being charged could emit explosive gases.
- Avoid smoking or open sparks or naked flames in the vicinity of the battery.
- Do not cover the charger while charging, allow good ventilation to the charger .
- Danger of chemical burns: battery acid is highly corrosive.
- If your skin or eyes come into contact with acid, immediately rinse the affected part with excessive wate and seek medical attention.
- Do not charge a frozen battery.
- Do not charge a damaged battery
- Disconnect battery from charger which is not connected to AC mains socket.
- Do not recharge non-rechargeable batteries
- When install in caravans and similar vehicles, the connection to the AC mains is to be in accordance with the national wiring regulations.
- If the cord is damaged, the charger should be scrapped .
- Check charger has reached Float Mode if it is intended to leave charger connected for a long period of time .
- As all batteries fail eventially. A battery that fails during charging is usually taken cared of by the charger's protection controls. However, accident can happen and do not leave charger in operation for week without checking up on it frequently.

When charging mounted automotive battery.

- The battery terminal not connected to the chasis must be connected first.
- Then make the next connection to the part of chassis away from the fuel line or Battery.
- After charging, disconnect the battery charger from the supply mains.Then remove the chassis connection first follow by battery connection.

Operation



Charging Mode	
SEALED	**Sealed lead acid battery Charge Mode ③ 28.4V/2.2A Max** Battery capacities of 8 - 60 Ah
WET	**Wet battery Charge Mode ④ 28.8V/2.2A Max** Battery capacities of 8 - 60 Ah
CALCIUM	**Calcium-Calcium battery Charging Mode ⑤ 29.6V / 2.2A max** Battery capacities of 8 – 60Ah

Plug in the charger to AC mains (100 - 240V) wall socket.
The indicatiors light up one by one as charger goes through a series of self checks. Then all lights are on together and off to indicate the end of checks except the operation “Standby” indicator.

Connect the red output lead to the positive terminal of the battery and the black lead to the negative teminal.

The “Standby” blinks to indicate that charger is ready for selection of Charge Mode.
User has 2 minutes to select the desired Charge Mode, and the charger will automatically enters into the last selected Charge Mode at the end of 2 minutes.

Select the appropiate Charge Mode by pressing the Mode button one or more times within 2 minutes. The Charge Mode indicator changes with each press “Sealed” → “Wet” → “Calcium-Calcium” → “Sealed” in cycle.

The Mode button will also be locked in 10 seconds after selection of Charge Mode.
If no pressing on the Mode key has been done after 2 minutes, the charger will automatically enters into the last selected charging mode.

Display	***Indications***
STANDBY	**Standby Mode ②** ***Steady light on :*** AC mains connected but charger is not yet connected to battery. ***Blinking light on :*** Battery is connected, 2 minutes to select charge mode before charger enters to last selected Charge Mode.
	Check Mode ⑥ ***Steady light on :*** For a few seconds initially for normal battery, charger checking battery. ***Steady light on :*** For longer time, charger in *desulphate charging. ***Blinking light on :*** When connected to battery showing the battery is not suitable for charge. ***Blinking light on :*** After unit in Charging Mode for long time (max. 40 hrs.), or desuphating charge (max.8 hrs.), battery still cannot hold charge or cannot be desuphated. Remove battery.
	Charging Mode ⑦ ***Steady light on :*** Charging in progress (desulphate and bulk or absorption charge stage)
	Float / Maintenance Charge Mode ⑧ ***Steady light on :*** Battery is fully charged and Charger in Float / Maintenance Pulse Mode
	Alarm ⑨ The blinking alarm indicates charging fault, check following faults. Output connectors short circuit Output connectors in wrong polarity Over temperature Protection activated, charging has stopped.

Check Mode and Normal Charging

The Charger first checks the battery's condition , for normal battery this indication extinguishes after a few seconds and charger enters into "Charge Mode" and finally to the "Float/maintenance Mode" when the battery is fully charged.

Charging Stages

Bulk : This charges the battery up to about 80% full.
The charger delivers a constant current of 2.2A for 4 minute and 1.25A for 6 minute cycle until the battery voltage rises to a set value.

Absorption : PWM charges to 100%. The terminal voltage is kept constant at set level. Charger deliver current pulses to battery varying pulse period. When the rise time of pulses decreases to a set value, charger switches to Float (maintenance) mode. The maximum total charging time of Bulk and Absorption is 40 hours at which the charger will shut down.

Float : PWM maintenance charging .
In this mode the charger does not deliver current when battery voltage is above a set value. When battery voltage drops below the set value, it receives pulses of current until the terminal voltage rises to the set float value.
This is to assure that the battery will not be overcharged and be kept filled up when the its voltage drops due to self discharge or other light loading.
The charger can be connected to a battery for months at a time without over charging it.

Check Mode and Desulphate Charging

The desulphate charging can recondition only slightly sulphated battery.

A. In the case the "Check Mode" indication is lit longer, the charger is in desulphate charging. After some time, if desulphation of the battery is successful, the charger will switch to normal charging and the "Check Mode" is extinguished.
B. If the desulphate charge fails to recondition the battery after some time, the "Check Mode" blinks. The battery should be replaced.
   The maximum desulphate charging time is 8 hours.

Check Mode and Unchargeable battery

A. If the Check Mode blinks before or after pressing the Mode button then the battery is not suitable for charging. Check the battery connections, clean battery terminals to double confirm if the battery is not really suitable for charging.
B. The Check Mode also blinks after 40 hours in Bulk and or Absorption Stage charging until battery is removed. This safety time feature is to avoid charging faulty battery which cannot hold charge.

Alarm and Faults

The blinking Alarm indicates faulty connections or charge condition so that charger does not give any output power. Once the fault has been corrected charger will continue to operate normally.

A. Wrong connection of Positve and Negative terminal will cause "Alarm" to blink.
B. Shorting the output cable terminals (crocodile clamps or ring connectors)
C. Over Temperature Protection has been activated charging has stopped.

Interrupting the charging process

When there is a power outrage, the charger will continue to charge at its last selected Charging Mode on the return of mains AC power.
The charger automatically completes the charging process when the charging end voltage is reached and switches to float / maintenance charge mode.

Specifications

AC Input	100-240V, 50/60Hz~, 1.5A MAX.
Maximum Output Charging Current	2.2A
Max. Power	65W
Efficiency	>78%
Absorption Voltage (Wet battery Mode)	28.8V
Absorption Voltage (Sealed lead (GEL, AGM) acid battery Mode)	28.4V
Absorption Voltage (Calcium-Calcium battery Mode)	29.6V
Construction	IP-45 (splash-proof) , poly-carbonate casing
Accessories	Detachable leads with crocodile clips and leads with ring terminals
Protection:	Overload, Short Circuit, Over Temperature, Reverse Polarity, No Spark For Battery Connected and Short Output.
Cooling System	Natural Convection
Approvals	CE EN 55014 EN 60335 EN 50366
Dimensions (LxWxH)	150x60x30mm

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

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